

Forming Collar Structures in Deep Trench Capacitors With Thermally Stable Filler Material

Abstract

In the course of forming the collar dielectric in a DRAM cell having a deep trench capacitor, a number of filling and stripping steps required in the prior art are eliminated by the use of a spin-on material that can withstand the high temperatures required in front-end processing and also provide satisfactory filling ability and etch resistance. The use of atomic layer deposition for the formation of the collar dielectric reduces the need for a high temperature anneal of the fill material and reduces the amount of outgassing or cracking.